

Applicant: Donald G. Parent
For: SYSTEM FOR COATING INSULATIVE SUBSTRATES

1 1. A system for applying a coating to an insulative component, the system
2 comprising:
3 a vacuum chamber;
4 at least one physical vapor deposition station arranged to apply a
5 coating material to the insulative component;
6 at least one cooling station arranged to actively cool the insulative
7 component and drive the temperature of the insulative component substantially down; and
8 a component handler designed to move the insulative component
9 within the vacuum chamber and programmed to automatically bring the components
10 proximate a physical vapor deposition station until the components are partially coated to a
11 predetermined thickness and then proximate a cooling station before thermal damage can
12 occur to the components and until they are sufficiently cooled and to then switch between
13 physical vapor deposition stations and cooling stations until the desired coating thickness is
14 obtained.

1 2. The system of claim 1 in which there are a plurality of physical vapor
2 deposition stations and cooling stations arranged circumferentially with cooling stations
3 positioned between physical vapor deposition stations.

1 3. The system of claim 1 in which there are a plurality of physical vapor
2 deposition stations and cooling stations arranged linearly with cooling stations positioned

3 between physical vapor deposition stations.

1 4. The system of claim 1 in which the cooling station includes a heat sink in a
2 subchamber and means for filling the subchamber with a high conductivity gas.

1 5. The system of claim 4 in which the components include a cavity and the heat
2 sink is shaped to fit within the cavity.

1 6. The system of claim 1 in which the programming of the component handler
2 includes logic which limits the partial coating time to less than one minute and the cooling
3 time to less than one minute.

1 7. The system of claim 1 in which the time span of partial cooling is the same
2 as or approximately the time span of cooling.

1 8. The system of claim 1 in which the components handler includes trays for
2 holding a plurality of components.

1 9. The system of claim 8 in which each cooling station includes one heat sink
2 for each tray.

1 10. The system of claim 9 in which each cooling station further includes a
2 subchamber containing all the heat sinks and means for filling the subchamber with a high
3 conductivity gas.